

Sealant Machine Monitoring System for Aircraft Manufacturer



Sealant Machine Monitoring System

This project was carried out by Timestar for an aircraft manufacturer. The requirement was for the design development, manufacture and commissioning of a system to monitor the performance of a number of pneumatically operated mixing machines, used for the preparation of various two part sealants.

During the operating cycle of each machine, the system was required to continuously sample pressure readings and then apply specially developed algorithms in order to detect and report various types of failure which would affect the quality of the product if undetected.



Figure 1: Wall mounted monitoring unit - inside view

A custom-designed microcontroller-based unit, utilising an 80C251, in a self-contained wall-mounted enclosure, was designed, one such for connection to each machine. These units incorporated audible and visual fault warning devices, as well as having the capability of halting the machine when a programmable level of faults was detected.



Figure 2: Wall mounted monitoring unit - front view

The hardware units were networked over an RS485 link to a PC running specially developed software written in Visual Basic which -

- Provided a user-friendly Graphical User Interface for the display of machine status
- Logged the pressure profiles and fault history to Excel files
- Facilitated the editing and downloading of sealant-specific and other parameters stored in an Access database, to be used by the fault detection algorithms.

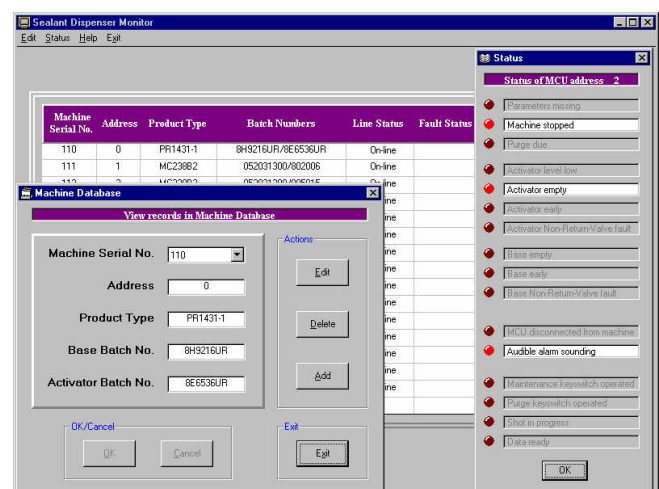


Figure 3: Graphical User Interface



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